T.F. CHEESEMAN'S DIARY OF A BOTANICAL VISIT TO RAROTONGA, COOK ISLANDS, 1899

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Abstract. T.F. Cheeseman, Curator of the Auckland Institute and Museum, visited Rarotonga in 1899 to study the flora. He kept a narrative diary, distinct from his field notebooks, which is transcribed here. It begins with the departure from Auckland on 9 May and ends abruptly with the entry for 3 July, near the end of the expedition. The diary details daily excursions to collect plants, traces Cheeseman's unfolding knowledge of the plants and vegetation, and describes some aspects of life on turn-of-the-century Rarotonga. Nine of Cheeseman's photographs of the expedition are reproduced.

Thomas Frederic Cheeseman (1845-1923) was born in Hull, Yorkshire, and came to New Zealand as a child with his parents (Goulding 1996). University training was then unavailable in New Zealand, but Cheeseman followed an interest in plants to become a self-taught botanist. In 1874 he was appointed sole Curator of the Auckland Institute and Museum collection, which position he held until his death (Powell 1967). Cheeseman married Rose Keesing (1857-1931) in 1889.

Cheeseman travelled to Rarotonga in 1899, accompanied by his wife, to collect herbarium specimens and study the flora (Cheeseman 1903). He kept a narrative diary of the expedition (Auckland Institute and Museum Library MS58, box 21, notebook 23) and this is transcribed below.

Rarotonga is 3,000 km north-east of New Zealand. The London Missionary Society was influential in the area from the 1820s and Rarotonga was declared a British Protectorate in 1888 (Douglas & Douglas 1994). With surrounding islands, it was transferred to New Zealand jurisdiction as the Cook Islands in 1901, soon after Cheeseman's visit.

THE DIARY

The Rarotonga diary is in an exercise book separate from Cheeseman's field notebooks, and entries are in ink. Cheeseman's writing is neat and fairly easy to read. The transcription below is almost completely verbatim. The dates at the start of each entry, sometimes written by Cheeseman as "May *n*" and sometimes as "May *n*th", have all been transcribed as "*n* May". All Latin names of plants have been set in italics whether Cheeseman underlined them or not. All question marks in the transcript are Cheeseman's.

The diary ends abruptly with the entry for 3 July, and no account of the rest of the trip exists in the Museum's Cheeseman collection (MS58). However, we know from Cheeseman (1903) that the trip to Rarotonga ended in July. Cheeseman sought to collect all the wild species but was greatly held up by wet weather and his specimens were not drying well. He may have been too pressed for time to keep up the diary.

Figs 1 and 2 show place names mentioned in the diary. Current Latin names of plants, and Latin equivalents of Cook Islands Maori names of plants, are given in Appendix 1.

The journey by sea from Auckland to Rarotonga took a week. In the narrative his acquaintance with the Rarotongan flora unfolds day by day as he discovers species new to him. The diary contains descriptions of the vegetation, and detailed descriptions of the arrival at

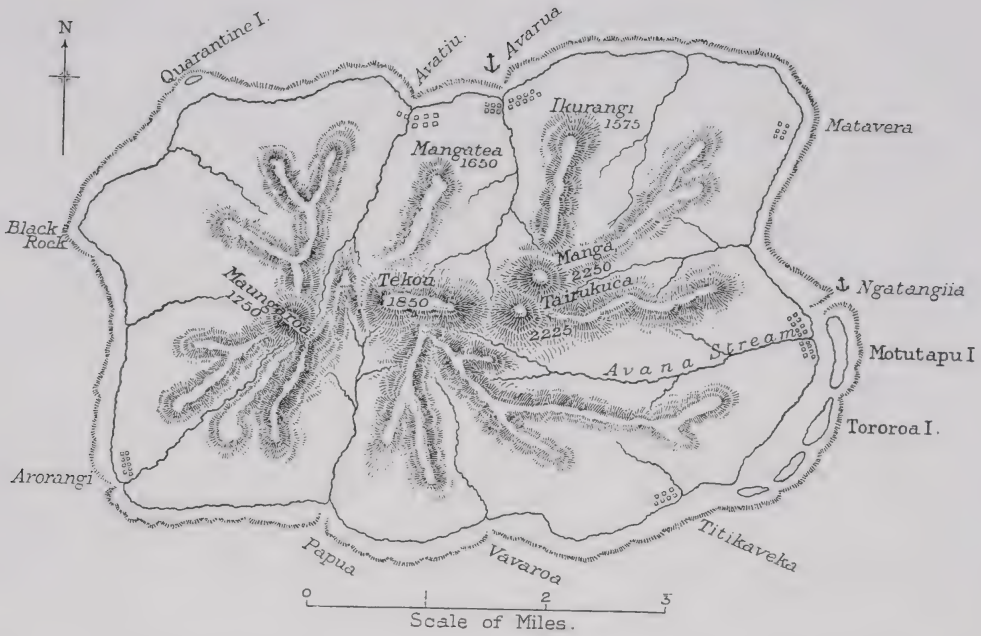

Fig. 1. Map of Rarotonga reproduced from Cheeseman (1903). "Outline from the Admiralty Chart; interior from rough sketches by T.F. Cheeseman."

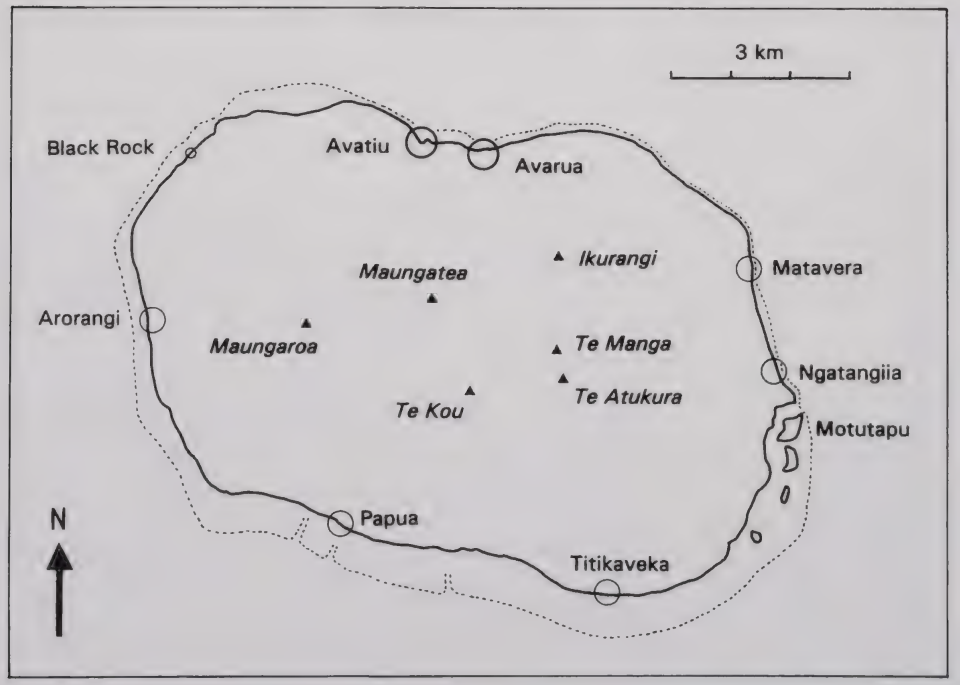

Fig. 2. Contemporary map of Rarotonga showing place names mentioned in the text.

the port of Avarua (16 May) and the home and surroundings where Cheeseman stayed at Arorangi (17 May). Also of interest are descriptions of the "native settlement of Arorangi" (20 May), a method employed by boys to catch wild roosters in the bush (2 June) and details of the size and construction of irrigated taro plantations (1 July).

Cheeseman "... travelled round the island, ascended all the mountains, and practically visited every portion of it ..." (Cheeseman 1903). "The mountainous interior of the island is seldom visited" on account of the "... total absence of tracks, the steepness of the hills, and the dense jungle-like forest ...". It "... is most unusual for either natives or Europeans to climb any of the mountains, and I was assured that the highest peak, Mount Taitukura [= Te Atukura, the second highest peak; Table 1], had not been ascended for at least eight years previous to my visit" (Cheeseman 1903).

The diary describes the ascent of Ikurangi (28 May), Te Kou (18 June), and Maungatea (25 June). Maungaroa was attempted on 30 May but the summit was not reached until a second attempt on 2 June, when the highest point was reckoned at 1650 ft. (This figure is confirmed by the entry for 18 June where the summit of Te Kou is described as "1850 ft, or 200 ft higher than Maungaroa." Cheeseman's sketch map (Fig. 1) shows Maungaroa to be 1750 ft, presumably an error since 1650 ft is closer to the actual height.) No accounts are given of trips to the summits of Te Manga and Te Atukura. These must have taken place after 3 July when the narrative ended. The heights of peaks estimated by Cheeseman using an aneroid altimeter compare very closely with the heights measured by modern means (Table 1).

Cheeseman took photographs on Rarotonga (e.g. 21 May). In 1993, Auckland Museum Library received from a descendant of Cheeseman (Miss Patricia Grant-Taylor) some old photographs that included a series of 33 prints showing tropical scenes (Thomas F. Cheeseman photograph collection, 93/8). They are without captions but appear to be some of Cheeseman's Rarotonga photographs, and nine are reproduced here (Figs 4-12). Fig. 13 shows a stone pounder collected by Cheeseman on Rarotonga.

BOTANICAL BACKGROUND

By 1899 there had been over a century of botanical collecting in the tropical Pacific and numerous specimens had been taken to Europe and the United States from many parts of Polynesia and Melanesia. Major collections existed for the larger island groups (notably

Table 1. Heights of the main peaks of Rarotonga as estimated by Cheeseman (1903) and as measured today (taken from map "Rarotonga" 1985, NZMS 272/8/6, Dept. of Lands & Survey, Wellington).

Peak	Cheeseman (1903) ft (m)	Modern measurement m
Manga (= Te Manga)	2250 (686)	653
Tairukuca (= Te Atukura)	2225 (678)	638
Tekou (= Te Kou)	1850 (564)	588
Mangatea (= Maungatea)	1650 (503)	523
Maungaroa	1650 (503)*	509
Ikurangi	1575 (480)	485

* See discussion in text.

Vanuatu, Fiji, Tonga, Samoa, the Society Islands and Hawaii) and several published floras had ensued. However, there were many gaps, including knowledge of the botany of the Cook Islands and of much of French Polynesia beyond the Society Islands. Before Cheeseman's visit to the Cooks only a handful of plant specimens had been collected. W.B. Hemsley of Kew Gardens wrote to Cheeseman on 5 January 1898 (Auckland Institute and Museum Library MS58, box 8, folder 4): "I have spoken to the Director about your proposed visit to the Cook Islands for the purpose of botanical investigation, and he agrees with me that it is very desirable ... So far as I can ascertain no trained botanist [h]as ever visited the islands, and the number of species of (dried) plants that have reached Kew in a condition for determination does not exceed three dozen, chiefly ferns."

Before going to Rarotonga, Cheeseman may have been able to study the several regional floras then published. *Flora Vitiensis* (1865-73) by Berthold Seeman became one of the most important background works for botanical studies in the tropical South Pacific. Even more relevant to Rarotonga was *Flore de la Polynésie Française* (1893) by E. Drake del Castillo, and the same author's *Illustrationes Florae Insularis Maris Pacifici* (1886). Cheeseman may have seen W. Hillebrand's *Flora of the Hawaiian Islands* (1888), and almost certainly knew W.B. Hemsley's *The Flora of the Tonga or Friendly Islands* (1894). Finally, Cheeseman may have known F. Reinecke's accounts of Samoan plants in *Botanische Jahrbüche* (1897, 1898) although only a small proportion of the species had descriptions.

Apart from a visit to the Kermadec Islands in 1887 (Cheeseman 1888), the Rarotongan expedition was Cheeseman's only botanical foray beyond New Zealand. It is unclear how much Cheeseman knew of the flora of Rarotonga before his visit, but his diary shows that he already had a good basic knowledge of tropical Pacific plants. He changed many names between the diary and the published flora (Cheeseman 1903), presumably as a result of correspondence with botanists in Europe, particularly at Kew Gardens. But for the flora he often had simply to add a specific epithet to the generic name used in the diary.

Cheeseman collected herbarium specimens of virtually all the wild Rarotongan higher plants that he encountered, some 334 species. The bulk of the specimens are held in the Auckland Museum herbarium (AK; E.K. Cameron, pers. comm.). Cheeseman acknowledged W.B. Hemsley at Kew (K) for examining and comparing specimens (Cheeseman 1903: 207), C.H. Wright at Kew for examining his new fern specimens (Cheeseman 1903: 309) and E. Hackel at Vienna (W) for examining and determining a set of Rarotongan grasses (Cheeseman 1903: 302). These duplicate specimens would have remained with the overseas specialists. Fig. 3 shows one of Cheeseman's new species, *Homalium acuminatum* (Flacourtiaceae), which is represented in AK by 11 sheets. Cheeseman collected some lower plants on Rarotonga and of these AK holds 19 moss collections, representing at least 17 taxa. Most of these are ex T.W.N. Beckett herbarium, determined by V.F. Brotherus in 1902. The Beckett herbarium at Lincoln (CHR) holds other Cheeseman Rarotongan moss specimens.

Of the 18 species of plants that Cheeseman considered to be Rarotongan endemics, 15 were described in his flora (Cheeseman 1903): nine by Cheeseman himself (one fern, one monocotyledon, seven dicotyledons), two grasses by Hackel and four dicotyledons by Hemsley. Four species bear Cheeseman's name: a dicotyledon, two grasses and a recently-described fern.

TRANSCRIPT OF THE DIARY

Tuesday, 9 May. Left for Rarotonga on the steamer Ovalau[1], casting off from Queen St. Wharf at quarter to nine pm. Only six passengers on board – Madame Arnaud and her

Fig. 3. Herbarium sheet AK 24967, *Homalium acuminatum* Cheeseman (syntype). Photo: N. Payne.

daughter, two Tahitians returning to their country after a visit to New Zealand; Mr Hemus [spelling uncertain], in the employ of Messrs Donald & Edenborough; another passenger, whose name I failed to learn; and myself and wife. The night was fine but dark, and after the steamer had rounded the North Head we both returned to our cabins.

Wednesday, 10 May. A beautifully fine day, with hardly a ripple on the water. Numerous albatrosses and Mollymauks followed in the wake of our vessel, and an occasional black petrel

was also seen. No incident worth mention occurred during the day. Towards evening the wind shifted to the eastward, but still continued light.

Thursday, 11 May. Gloomy and cloudy during the whole of the day, with light N.E. breeze. Towards the evening a dense bank of clouds appeared in the North, and the general impression on board was that a N.E. breeze would be encountered on the following day. Numerous albatrosses still following in our wake. Expected to see flying fish, but none was noticed.

Friday, 12 May. On awaking in the morning found that we were running before a strong S.W. breeze, with sails set to help us on. The breeze freshened during the day, and seemed to have the effect of increasing the number of albatrosses and small petrels following in our wake. Towards night the wind drew more into the West, raising a beam sea, making the Ovalau roll rather disagreeably.

Saturday, 13 May. W. breeze the whole day, with high beam sea. Still plenty of albatrosses and petrels.

Sunday, 14 May. Much finer. Light N.W. breeze, and sea much smoother. We now commenced to feel the temperature much warmer. Almost all the albatrosses have left us.

Monday, 15 May. Light N. breeze and smooth sea. Quite warm, but cloudy; and sky not at all what one would expect to see in the tropics. All the albatrosses have gone; and the only birds seen during the day were a few tropic birds and one or two noddies and terns. Flying fish abundant during the whole of the day. They disappointed me, on account of their small size.

Tuesday, 16 May. A dull, cloudy morning, with light S.E. breeze – which I suppose must be counted as the trade wind. Rarotonga was sighted about 9 o'clock. At first only the high central peak was seen; then two others appeared, standing off like two little islands. By eleven o'clock the shape of the island could be distinctly made out. Shortly after drizzly showers came on, and continued until we had reached the south end of the island. About two the steamer anchored off Avarua harbour, situated at the northern end of the island. The weather now cleared up, and we had a good look at the island from the anchorage. High and rugged mountains were seen to occupy the whole of the central portion, with deep gorges and ravines. Many of the peaks were rocky and one remarkable column of solid rock presented a very remarkable appearance as seen from the coast a little to the south of Avarua. It must be at least 200 ft in height. Except on these steep and rocky portions the whole island, from the sea beach to the crest of the hills, was covered with luxuriant forest. Even from the anchorage one could notice that the vegetation was rich and diversified, with many varying tints of foliage. Cocoa nut palms [= *Cocos nucifera*] were plentiful towards the coast, and alone gave the landscape a truly tropical appearance. A fringing reef runs all round the island, usually only a few hundred yards from the shore, and on the outer rim of this a line of white and foaming breakers was plainly visible. Just opposite to our anchorage were two gaps in the reef – one leading to the harbour of Avarua, the other to that of Avaiti [= Avatiu] – situated only a few miles to the southwards [actually about a mile westwards].

The anchor had no sooner dropped than we were boarded by the health officer and the custom house officers. And then some score or two of stalwart Rarotongans – tall, lithe and well-built – climbed up on the deck to offer their services for the work of discharging the cargo. We were also surrounded by quite a fleet of little outrigger canoes – each paddled by a single man. The object of this visit was evidently fishing, for as each canoe drew up under our lee, the occupant quickly had his line and hook over the side. And notwithstanding we were anchored in ten fathoms of water, we could distinctly see the bottom, and even the fish swimming to and fro.

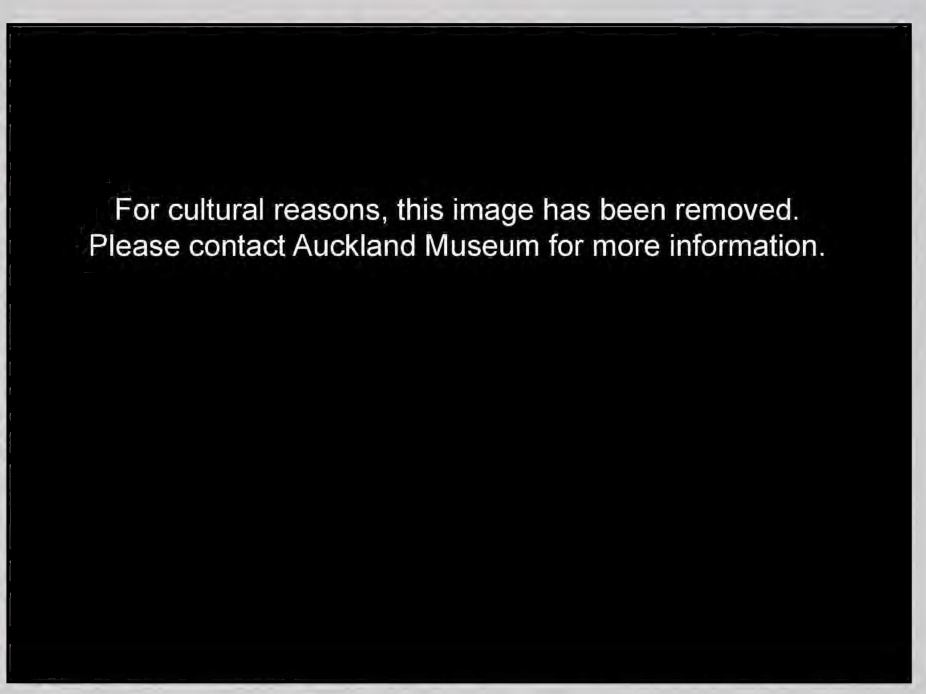

Fig. 4. Family group, Rarotonga, 1899. Possibly Arorangi – "Numbers of gaily dressed men and women were sauntering up and down the road in front of their houses, and I secured several good photographs" (21 May). Photo: T.F. Cheeseman (Auckland Museum Library).

After our luggage had been examined and passed, we landed in the little oil launch that plies between the steamer and the shore, and soon landed on the Union S.S. Co's wharf. There were crowds of gaily dressed Rarotongan women, drawn up to see the arrivals by the steamer. We were very favourably impressed by their appearance. Tall, well-built, of graceful aspect and with much natural dignity of carriage, they welcomed us without any bashfulness or hesitation, and at the same time with a politeness and suaveness seldom seen in uncivilised man. We found that Col. Gudgeon[2], the British Resident, was absent on some of the other islands of the group, but we were introduced to the Rev Mr Hutchins [*sic*][3], the leading clergyman, and his wife and also a number of other residents.

Avarua township is a long straggling place extending for some distance along the road which runs all round the island a little distance from the beach. There are several stores or shops, interspersed with the residences of the natives. Most of them have patches of garden in front of them, and one saw many well-known tropical plants which had been imported from abroad. But I will reserve a description of the place until I have become more familiar with it.

We had arranged to stay with Mr & Mrs Rice, whose residence turned out to be between three and four miles distant, near a native village called Arorangi. Mr Rice welcomed us immediately on our landing, and we found he had a buggy waiting to drive us out. After a little delay, we left Avarua about 4 o'clock. The drive was a beautiful one. The road runs parallel with the coast, seldom being more than 1/2 mile from it, and often much less. In many places it is lined with groves of cocoa-nuts, and here and there we passed through the cultivations of the natives – bananas, taro, kumaras, etc. But these I will describe later on. One of the most curious sights – or rather one which perhaps impressed us as much as any – was the screw pine

(*Pandanus odoratissimus*) – elevated on the top of its aerial roots. We arrived at Mr Rice's residence a little before sunset, and were glad to find a comfortable well arranged house, built with more regard to the requirements of a tropical climate than appears to be generally the case on the island.

Wednesday, 17 May. Early in the morning Mr Rice drove in to Avarua to fetch my heavy luggage, containing my drying paper and collecting apparatus. On his return I at once commenced to unpack. A work table was improvised in one of the sitting rooms, and I soon had my drying paper, boards and straps, books, microscope, dissecting instruments, etc etc, arranged in a very convenient way. A little closet proved to be very suitable for storing away my collecting bottles and photographic requisites. My tank for larger specimens in formalin, was kept on the verandah.

Mr Rice's house is a low edifice surrounded on three sides with a broad verandah. The foundations and walls are of concrete, the lime being obtained by burning the coral rocks. The windows are large and broad, and the rooms open into one another with broad openings six feet wide or more, without doors but furnished with portieres. There is consequently plenty of ventilation, an indispensable requisite in such a climate. The verandah is roofed with iron, but the house itself is covered with a paper or felt covering, painted red, fastened on a boarded roof. I understand, however, that the material had proved to be hardly suitable for the climate. Under the house is a cellar, used for keeping stores, and doubtless very useful for that purpose. The kitchen, etc, is at the back of the house, and the walls, for a portion at least, are composed of open lattice work. The sitting rooms and bed-rooms in the front are very nicely and appropriately furnished. The floors are covered with clean native matting, and the windows are protected with dark green roller blinds. Altogether the house is [a] comfortable and well-arranged residence. A Rarotongan girl, and two boys make a good set of servants, and have evidently been well and carefully trained.

The house stands east and west, facing the east. Standing on the front verandah, one looks directly at the central peaks of the island – steep ridges and sharp-pointed peaks, clothed with dense and luxuriant vegetation, excepting one or two hills, which appeared to be bare on top. At the base of the hills was the thick tropical vegetation, and in front of that a grove of cocoa-nut palms, their broad feathery foliage waving in the wind, the large yellow fruit showing in clusters just at the base of the leaves. Round the house itself is a clearing of a few acres in extent, occupied here and there with a second growth of *Carica papaya*, a very striking plant of palm-like habit, its stems loaded with the large smooth fruits. On each side is the virgin forest, here largely composed of the Puka (*Hernandia peltata*) and Utu (*Barringtonia speciosa*), both of them magnificent and umbrageous trees. From the back of the house it is only a few yards to the beach – here a wide strand of coral sand white and dazzling in the sun. A little distance from the shore – perhaps quarter of a mile – is the fringing reef which everywhere encircles the island and on which a line of snow-white breakers is incessantly rolling. Between the breakers on the edge of the reef and the shore is a stretch of calm shallow water – here and there studded with projecting coral rocks. The shore is lined with a fringe of *Casuarina equisetifolia*, through the branches and filiform leaves [actually the branchlets] of which the wind soughs with a noise reminding one of a pine forest. The undergrowth close to the sea is composed of *Scaevola Koenigii*, which forms a continuous belt a few yards in width.

Thursday, 18 May. This day I spent in collecting the plants in the immediate vicinity of the homestead – not going further away in any direction than half a mile or so. The forest, so far as its general appearance is concerned, differs chiefly from that of New Zealand in the greater luxuriance of the foliage. A much larger proportion have large leaves. The *Hernandia peltata, Barringtonia, Hibiscus tiliaceus, Morinda citrifolia, Guettarda speciosa* are all good

Fig. 5. Unidentified women, Rarotonga, 1899. The woman on the right appears in Fig. 3. Photo: T.F. Cheeseman (Auckland Museum Library).

Fig. 6. Family group, Rarotonga, 1899. Probably 26 May – "In the afternoon Matthew brought his father, mother and three brothers to be photographed." Photo: T.F. Cheeseman (Auckland Museum Library).

examples, bearing large broad showy leaves. The cultivations are covered with an assortment of weeds quite different to anything we possess in New Zealand. Two species of *Sida* are very plentiful, *Urena*?, *Ageratum*, *Asclepias curassavica*, one or two labiates, several malvaceous plants, *Eleusine indica*, *Digitaria*, *Oplismenus*, etc, are common plants.

Friday, 19 May. The weather changed early in the night, and heavy rain came down in torrents, accompanied with vivid lightning. During the day the rain was not quite so heavy, but sufficiently so to put all exploration out of question.

Saturday, 20 May. Almost the whole night the rain fell in torrents, accompanied with very vivid lightning. About sunrise the weather cleared up, and by ten o'clock the sun appeared, the rest of the day being beautifully fine. In the morning I walked to the native settlement of Arorangi, distant about a mile. It is quite a large village, stretching along the road side for a considerable distance – indeed I did not reach the end of it. On either side of the road is a low stone wall, covered here and there with a species of *Peperomia*. All the houses have little patches of cultivation in front, and I was struck with the number of tropical shrubs and flowers grown for ornament. Conspicuous among these were the Frangipani, with its large panicles of scented yellow flowers and fine bold foliage; the Gardenia, with glossy foliage and pure white scented flowers; *Hibiscus rosa-sinensis*, a scarlet and pink-flowered variety; one or two other Hibisci; an *Acalypha*, with crimson foliage, etc. etc. A very handsome tree, the Io [= tou], was also common (*Cordia subcordata*) – also a species of *Macaranga*, the native name of which was given to me as Enua. The residence of the chief "Ariki" of the district – at present a female – was pointed out to me. It is a long two storied weather boarded house with verandah and balcony in front, and has a somewhat dilapidated appearance. Next to it is a large stone church – quite an imposing edifice, with huge windows [see Fig. 10]. It appeared to be undergoing repairs. Directly opposite was the public school, also a large building. The native houses were of all styles and sizes, from a mere hut to a comfortable looking stone or weather-board house. In the afternoon I strolled in the other direction to a place called "The Black Rocks", where a mass of volcanic rocks runs down into the sea. Here I found some very interesting plants – *Ficus tinctoria*, a species of *Pipturus*, a violet *Ipomoea* [= *I. littoralis*], etc.

Sunday, 21 May. The morning opened fine, but before breakfast it clouded over, and heavy showers fell during most of the morning. About 11 o'clock it cleared up, and I sallied out and took a couple of photographs of the breakers on the reef. There was a heavy swell, and occasionally the height of the waves rolling and curving over on the leaward side of the reef was very great indeed. In the afternoon I walked over to Arorangi, taking my camera with me. Numbers of gaily dressed men and women were sauntering up and down the road in front of their houses, and I secured several good photographs.

Monday, 22 May. Rain again during the night, clearing up in the forenoon. After lunch drove in to Avarua with Mr Rice, and delivered some letters of introduction – Mr Van Hoff, Mr Taylor, Mr Pilz, etc etc. Collected a few plants on my way home. In the evening developed a few photographic plates.

Tuesday, 23 May. In the morning changed my plants and developed some photographic plates. In the afternoon struck inland opposite to Mr Rice's. Saw some splendid specimens of *Inocarpus edulis* – a tree remarkable for its fluted or buttressed trunk and large yellowish fruit. Also *Cananga odorata*, a most handsome tree, with a smooth straight trunk and very handsome foliage, spreading in a distichous manner. *Artocarpus* was also plentiful. Wandered along the old inland road – in many places paved, and bordered with low stone walls[4].

Wednesday, 24 May. Writing letters all the morning. In the afternoon drove in to Avarua to post our correspondence for the homeward steamer. Got back about 7 pm.

Fig. 7. Black Rock, Rarotonga, 1899. "Took a few photographs of the Black Rocks in the evening" (10 June). Photo: T.F. Cheeseman (Auckland Museum Library).

Thursday, 25 May. Got Matthew Kea, a bright young boy, to go with me and carry my vasculum. We walked half way to Arorangi and then struck inland until we reached the old road of Toi, along which we walked for some distance. Saw a splendid Banyan tree [= *Ficus prolixa*], with its aerial roots all fused into an enormous trunk. Unfortunately it had neither flowers or fruit. Also saw a tree called the "Pukatea" – but it too had no flowers or fruit. It attains a height of over 60 ft, has a smooth pale bark, buttressed at the base, like the New Zealand plant bearing the same name, but the foliage is altogether different. Another tree new to me is the cotton tree, or "Vavai". It has a clean cylindrical trunk with smooth and even bark, studded here and there with formidable short spines inserted on a broad base. In the evening went with Rose and the Rices to take tea with Miss Large, the teacher of the London Missionary Society's large boarding school.

Friday, 26 May. In the morning went with Matthew Kea to Arorangi, and beyond the village to the mouth of the little stream. Then struck inland. Saw *Inocarpus* in great plenty, one tree having a few flowers left. Collected what I suppose to be *Jussiaea suffruticosa*, growing in great plenty round the margins of some artificial swamps used for cultivating the Taro. Collected also *Davallia parallela* (?) growing on the lower portion of the trunks of Cocoa nut palms, *Oxalis, Siegesbeckia*, a curious little *Euphorbia*, etc. etc. In the afternoon Matthew brought his father, mother and three brothers to be photographed [Fig. 6]. Afterwards I took a walk to the top of a burnt hill a little distance from Mr Rice's. A second growth of *Casuarina* is rapidly covering the hill; but at present the most conspicuous plants are *Gleichenia dichotoma*, which covers the ground like our *Pteris aquilina* in N.Z., a tall grass not in flower; a purple *Ipomoea* [= *I. littoralis*], and *Paspalum scrobiculatum*. When returning I gathered a *Cyperus* near a swampy hollow occasionally filled with water after heavy rains.

Fig. 8. People and horses with cultivations beyond, Rarotonga, 1899. This is probably the Rice's garden at Arorangi. The European man may be Mr Rice, and the European women Mrs Rice and Mrs Cheeseman. Photo: T.F. Cheeseman (Auckland Museum Library).

Saturday, 27 May. Struck inland from Mr Rice's by way of Hill's plantation until I reached the mouth of a large gully which evidently comes quite from the heart of the mountains. Found a considerable number of ferns new to me. *Acrostichum*, 2 species, one of which is evidently *A. spicatum, Adiantum hispidulum*, two or three species of *Asplenium*, two *Trichomanes*, etc. Enormous plants of *Marattia fraxinea*[5] were observed in several places close to the edge of the stream, some of the fronds must have been quite 20 ft long. A curious shrub, probably a *Boehmeria*, was common along the stream. But the find of the day was a *Fitchia*, perhaps the same as the *F. nutans* of Tahiti. It forms a small tree, 10-25 ft with slender trunk. The flowers are solitary and hang downwards. They are of large size, and of a beautiful orange colour. Leaving the edge of the stream, and climbing up the hill side I saw several fine plants. A *Melastoma*, with large white flowers was plentiful. A large *Weinmannia* was also abundant. Great quantities of *Schizaea dichotoma* were growing in the shade of the trees and two epiphytic orchids were gathered; one being quite leafless, with the rhizomes or stems spreading in a stellate manner on the trunk of the tree [this orchid is *Taeniophyllum fasciola*].

Sunday, 28 May. Had an early breakfast and drove to Avarua. Met Dr Craig there by appointment, and as soon as he had disposed of his hospital work we started to make the ascent of Hikurangi [= Ikurangi], a bald peak just to the N.E. of Avarua township. We drove a couple of miles out of the town, and then turned up a side track for half a mile or so until a little hut was reached. Here we left our buggy, and after disposing of our coats and all other unnecessary impedimenta a start was made for the mountains. Our party consisted of Dr Craig and myself, and seven Rarotongans, named respectively Pakari, Karatau, Enua, Ropou, Tere, Makitira,

and Ahpu, the latter Dr Craig's servant. Out of the seven, only two had been engaged to come with us, the remainder joined the party out of curiosity. After leaving the hut, the track followed the bed of a little stream for some distance. Magnificent trees of *Inocarpus edulis* were passed, but the chief vegetation was the Au (*Hibiscus tiliaceus*). Here and there were swampy patches filled with Taro, the edge of the ponds fringed with *Jussiaea suffruticosa*. Further on were great quantities of *Marattia fraxinea*, the native name of which I was told was Anae[5].

After a time we left the stream, and struck up an open spur, mainly covered with *Gleichenia dichotoma* and a coarse and tall tufted grass not in flower. We passed through large patches of *Melastoma denticulata*, the native name of which is Kotaa. *Lycopodium cernuum* was common. Ascending a little higher, we had light scrub on each side, mainly composed of *Fitchia* (native name Neinei), *Mussaenda frondosa* (native name Kotuku) and an apparently Apocynaceous plant with milky juice, very shiny leaves, and large panicles of small, strongly contorted, white or yellow flowers [= *Alstonia costata*]. The *Weinmannia* noticed in the gullies opposite to Mr Rice's was also very common.

A steep climb brought us on to a higher wooded ridge trending more to the right, and this we followed for a considerable distance. At last we reached the foot of the main peak, and here, at an altitude of about 800 ft, we called a halt. On a steep rocky face to our right I noticed great quantities of a small Rubiaceous plant 6-18 inches high, with small white flowers [= *Hedyotis foetida*]. *Peperomia* also was abundant – also *Metrosideros polymorpha*. Finding it impossible to keep along the ridge, we struck along the eastern face of the peak, ascending it obliquely. Great quantities of *Ascarina* were noticed – also *Fitchia* and *Fagraea*, and a considerable number of trees not yet identified. The very summit of the peak was exceedingly difficult of ascent, and but for the trees growing here and there would have been still more so. Great care had to be exercised by those in front, lest they should accidentally roll stones on those below. Towards the top quantities of *Lycopodium flagellaria* and another species were noticed, also a curious single leaved Orchid with a spike of small greenish flowers[6]. At last the summit was reached, my aneroid making the height to be 1575 ft.

The most abundant tree on the summit was *Fitchia*, in full bloom; dwarfed to a height of 8 or 10 ft. *Metrosideros polymorpha* – *Boehmeria* sp. – *Fagraea Berteriana*, also plentiful – the most abundant plant after the *Fitchia* was a small tree with oblong leaves 1 inch long, and with roundish immature fruit [= *Xylosoma suaveolens* subsp. *gracile*]. Other plants – *Oxalis corniculata, Davallia elegans, Nephrolepis exaltata, Oplismenus, Ageratum conyzoides, Polypodium phymatodes, Peperomia, Cordyline terminalis, Euphorbia* (same as coast species)[7], Mountain grass – etc etc.

Our party soon rigged a flagstaff, and a large flag was soon displayed to the gaze of the inhabitants of Avarua. And then to my surprise the whole of our natives knelt down and offered up lengthy prayers as a recognition of their successful ascent. The scene was a very curious one. Seven stalwart dark skinned Polynesians, ranged in a circle on bended knees, with bare heads and serious or even devout aspect, listening attentively while their leader prayed loudly and fervently. He evoked the care of the Almighty for each of the party not forgetting to mention myself, asking that the Tohunga who had come from so far to examine the plants of Rarotonga should be strengthened and supported in all his doings.

After an hour's stay on the summit we descended, taking a more direct route than the one followed in the ascent. It was getting dark when we reached the hut. Here a brief stay was made while a meal of bread & cheese and bananas was made. Then a drive of half an hour's duration took us to Avarua. Here a heavy shower of rain compelled us to wait until nine o'clock, after which Dr Craig drove me out to the Rice's.

Fig. 9. Group of young men, Rarotonga, 1899. Photo: T.F. Cheeseman (Auckland Museum Library).

Monday, 29 May. The morning was occupied in arranging my collections, drying my paper, etc. In the afternoon drove in to Avarua, and called on Mr Hutchin, the resident missionary. His place is a very pretty one – the parsonage, a substantial stone building – nestles at the foot of a steep rocky hill. In front is a small and well kept grass field with a neat drive leading to the church, a large and massive stone building. Drove home in the evening.

Tuesday, 30 May. Soon after breakfast started with Mr Rice for the ascent of Maungaroa, the long range the termination of which overlooks the village of Arorangi. We drove to Arorangi, and then some distance past, turning off a little before reaching the little stream which runs into the sea about a mile beyond Arorangi. We followed a rough track until a hut was reached. Here we left the buggy, and crossing some taro patches, round the margin of which *Jussiaea suffruticosa* was growing in great luxuriance, struck along a footpath with abundance of *Inocarpus*, Vi, and other trees, we at length reached the old road of Toi. Following this to the eastwards for a short distance, we reached another footpath striking off to the left. Half an hour's walk on this brought us to an abandoned clearing and old house, half smothered in a rank growth of *Leucaena, Sida*, etc. Noticed three large and handsome trees of *Cerbera odollam*, covered with abundance of deliciously scented large white flowers: and also with large pendant fruits – oblong, and 3-4 inches long. Leaving the cultivation, a short walk through a patch of light bush brought us to the foot of a steep open slope leading up to Maungaroa itself. This was scattered over with huge rocks of all sizes and shapes, covered over with a vegetation mainly composed of *Gleichenia dichotoma, Lycopodium cernuum*, a tall stout grass 4-7 ft high, and a few other plants. Here and there were plants of *Mussaenda frondosa*, with their panicles of yellow flowers, and white foliaceous calyx lobes. Further on large areas were covered with *Entada scandens*, with its tough rope like stems and

erect spikes of small greenish flowers. I did not notice pods. A little distance up the spur were a few fern trees – a species of *Alsophila*. The Caudex was about from 4 to 6 ft high, and barely thicker than a man's wrist. A little higher up a single specimen of a *Cyathea* was observed – with a stout trunk thicker than a man's thigh. A steep climb brought us up to the summit of the range – the lower part of Maungaroa. This part forms a flat topped hill [= Raemaru] the highest part of which was 1225 ft high. It has a steep escarpment towards the west and south, but slopes away more gradually towards the east, the side on which we ascended it. Vegetation principally stunted *Gleichenia dichotoma, Lycopodium cernuum,* a sedge (perhaps a *Fimbristylis*) a curious herbaceous plant with much of the habit of an *Euphorbia*, but altogether different. Here and there were patches of a small Scrophulariaceous plant [= *Lindernia crustacea*] with flowers much like an *Euphrasia*. A minute *Ophioglossum* [= *O. nudicaule*] was also plentiful. We struck along the ridge towards the higher portion of the range, first descending a little from the flat-topped hill. The ridge soon became very narrow, and covered with forest, principally composed of *Metrosideros, Fitchia, Fagraea*, with an undergrowth of *Freycinetia* and ferns. Collected specimens of what appears to be *Canthium barbatum*, also a species of *Psychotria*[8], and a plant much like a *Geniostoma*. Finding it impossible to reach the top of the range that day we retraced our steps to the clearing and then to our horse and buggy, reaching home a little time before dark.

Wednesday, 31 May. In the morning dried my paper and changed my plants. In the afternoon walked on the beach to Arorangi. Collected a nettle like plant in one of the Maori cultivations which I take to be a species of *Fleurya*. The Pukatea appears to be common along the beach, mixed with the Utu (*Barringtonia*) and Puka (*Hernandia*).

Thursday, 1 June. Rainy and threatening in the morning. In the afternoon walked to the Black Rocks, about a mile from Mr Rice's. Obtained *Leucaena Forsteri* in flower, also

Fig. 10. Ziona Cook Islands Christian Church (built c. 1849), Arorangi, Rarotonga, 1899. Photo: T.F. Cheeseman (Auckland Museum Library).

Eclipta alba, a sedge new to me, and *Ipomoea biloba* [= *I. pes-caprae* subsp. *brasiliensis*], which creeps for yards over the surface of the rocks. So far this place is the only part of the island where I have noticed the Volcanic rocks coming down to sea level. Striking inland, I noticed some fine trees of Cacao (*Theobroma*) and an unusually fine grove of *Inocarpus*. A little further on I came across the finest Banyan (*Ficus prolixa*) I have yet seen.

Friday, 2 June. Started with a Maori boy for the ascent of the culminating point of the Maungaroa Range. We walked from Mr Rice's to Hill's plantation. Here we found another Maori boy carrying a cock, with a long string tied to its leg. I found by enquiry that the boys are in the habit of carrying these cocks into the hills. They put them down in an open place near to where they believe there are numbers of wild fowl. The cock commences to crow, attracting the wild cocks, who come and commence to fight with the tame one. They get entangled with the string, when the boy rushes up and catches the wild bird. Our road led up the bed of the creek which I had visited on May 27th. We followed the stream until we reached the foot of a bare spur leading from the Maungaroa range. Crossing from this spur to another one, and then to a third still further up the valley, we commenced the ascent. The sides of the spur had plenty of *Blechnum orientale*, with *Gleichenia* on the face and top. The gullies on the right and left were filled with *Weinmannia, Fagraea, Fitchia,* Matoa [probably moto = *Homalium acuminatum*], etc etc. The bare ridge led up well on to the face of the mountain, but was steep and rocky towards the top. Collected a *Nephrodium* here, also a small green *Cyperus*.

Entering the forest, we found that our road led on the top of a narrow ridge. A species of *Coprosma*, reminding me to some extent of the Kermadec Islands *C. acutifolia,* was plentiful, and I obtained both ♂ and ♀ flowers. Then I observed plants of *Wikstroemia* – a handsome shrub, of a peculiar green tint resembling some honeysuckles. Its flowers were greenish yellow. The principal vegetation on the ridge was *Metrosideros, Fagraea, Fitchia, Coprosma* and one or two others. And this continued all the way up to the highest peak, which I made out to be 1650 ft. The undergrowth is principally composed of *Freycinetia, Blechnum orientale*, and other ferns. Towards the top were great quantities of a terrestrial orchid, with a single leaf and a spike of greenish flowers[6]. *Oberonia* was also plentiful and two epiphytic species. A species of *Lomaria* and a *Doodia* were not uncommon towards the top. On the sharp ridges I collected a shrubby plant 2-3 ft high which may be *Vaccinium*, also a Rosaceous plant with creeping stems and pinnate leaves, which seems to me to be near the Sandwich Islands *Osteomeles*. The same plant was observed much lower down on our return. After a brief stay on the top we retraced our steps, keeping much lower down the main ridge before turning off. A handsome large leaved shrub with axillary panicles of whitish flowers and fleshy fruit was also collected. Also a *Loranthus*, growing parasitically on *Fitchia*. We reached Mr Rice's at dusk, well satisfied with our journey.

Saturday, 3 June. In the morning arranging plants and drying paper. In the afternoon drove to Arorangi, and bought a number of bowls, drums, stone beaters and other curios for the Museum[9]. Rain set in a little before 5, driving us home.

Sunday, 4 June. Heavy showers, with thunder and lightning, during nearly the whole of the night. Some remarkably heavy showers about breakfast and from thence onwards until about 2 o'clock, when the rain ceased. Too wet to do anything for the rest of the day.

Monday, 5 June. Changed my plants in the morning, which was somewhat drizzly. About dinner the sun came out, and I was able to dry my paper – which I could not do for the two previous days. Rain set in again in the evening; no collecting possible.

Tuesday, 6 June. In the morning changed my plants, and dried paper etc. In the afternoon drove through Arorangi towards Titikaveka. Collected *Canavalia sericea*, a *Vitex* like shrub

with trifoliate leaves and blueish flowers, and a sunflower like plant [= *Tithonia diversifolia*]. Heavy showers prevented us from going off the road. In the evening called in at Arorangi, and bought some more pounders, etc.

Wednesday, 7 June. In the morning until 11 changing plants, etc. Then went out and examined the gullies and spurs coming from the lower part of the Maungaroa Range. Collected a few additional plants.

Thursday, 8 June. Changing plants and drying paper in the morning. In the afternoon went up one of the spurs of Maungaroa. Got several interesting plants new to me.

Friday, 9 June. Mr Rice drove me round the island[10]. After passing the stream which runs into the sea a little distance beyond Arorangi, the iron-wood belt which generally fringes the sea ceased – although there was still plenty on some of the rocky hills inland. Some nice bushes of Pandanus lined the beach near Papua, of which I secured some photographs. Saw one or two trees of *Calophyllum inophyllum*. The beach was covered in many places with *Ipomoea biloba* [= *I. pes-caprae* subsp. *brasiliensis*] and *Canavalia sericea*. Further on, at Titikaveka, giant Pukateas lined the shore. The old ones are generally buttressed at the base and frequently hollow – often with cavities big enough to admit a man. At Ngatangia [= Ngatangiia] the reef has several little islands on it, thickly covered with vegetation, forming quite a sheltered little harbour. Found several saline plants here, not previously seen on the island. At the entrance to the harbour it is possible to walk right down to the edge of the reef. Here I collected a grass new to me, a *Portulaca*, and a fleshy shrubby plant with large fruit [probably *Capparis cordifolia*]. The whole neighbourhood is well worth a careful exploration. From Ngatangia we drove to Matavera, and from thence to Avarua and home. The lowland vegetation is practically the same all round the island.

Fig. 11. Dwellings, Rarotonga, 1899. Note four-wheeled buggy under lean-to. Photo: T.F. Cheeseman (Auckland Museum Library).

Saturday, 10 June. At home all day, drying paper and changing plants. Took a few photographs of the Black Rocks in the evening [Fig. 7]. Heavy rain, with unusually vivid lightning, set in after dark.

Sunday, 11 June. Heavy rain before daylight. After an early breakfast drove in to Avarua by appointment with Dr Craig, to make the ascent of the flat-topped mountain between Avarua and Ngatangia. But the rain had been too heavy, and after a consultation it was decided to defer the expedition until the following day. Saw Col. Gudgeon for the first time. Drove home, and spent the rest of the day studying and arranging plants.

Monday, 12 June. Attending to plants in morning. Then walked to Nichola's clearing beyond the "Black Rocks". Was much impressed with a Fungus (Tremelloid?) which entirely covered the sides of the track to the clearing. It was most slippery to walk over, and in places was more than 2 or 3 inches deep. Saw a fine large Cacao tree in full fruit, but little else of importance. In the afternoon heavy showers, which kept me at home.

Tuesday, 13 June. In the morning attending to plants and photographing. In the afternoon drove in to Avarua to call upon Col. Gudgeon. Drove home in the evening, and narrowly escaped being caught by the rain. The Ovalau passed Mr Rice's about 9 o'clock.

Wednesday, 14 June. Much cooler weather, with a strong S.W. breeze. Drove in to Avarua to get my letters in the morning, and collected weeds, etc, about the township. In the evening arranging plants, etc.

Thursday, 15 June. Drove to Papua, accompanied with a Maori boy called Josephus. Ascended the stream as far as a waterfall about 30 ft in height. In the valley below the fall, which was densely wooded, saw *Hernandia Moerenhoutiana* for the first time. This is in some respects handsomer in foliage than *H. peltata.* Also collected great quantities of *Nephrolepis altescandens*, climbing up trees to a considerable height. Above the falls *Trichomanes rigidum* was very plentiful. Struck up a spur in the direction of a tall pillar of bare rock [Te Rua Manga, "The Needle"] which shows very distinctly from the sea. At first the spur was open, but at length the bush was reached. Collected a possibly Euphorbiaceous plant, a small tree or shrub with milky juice and oblong berries 3/4 inch long, quite black when ripe [= *Alyxia stellata*]. Also saw *Viscum articulatum* parasitic on *Fitchia.*

Friday, 16 June. Drove in to Avarua. Had lunch with Dr Craig, and then walked with him up the track behind the township. Collected a large *Asplenium* of the *Diplazium* section, also *Pteris comans, Phaseolus adenanthus*, and one or two others.

Saturday, 17 June. Weather unfavourable. Working in doors attending to plants etc.

Sunday, 18 June. Had an early breakfast and then drove in to Avarua, leaving our horse and buggy at the back of the Post Office. Started with Ahpu and two other Maoris to ascend the flat-topped mountain [Te Kou] at the head of the [Takuvaine] valley. Great quantities of Taro plantations in the valley, irrigated by little streams drawn from the gully. Fehi [= *Musa troglodytarum*, a kind of banana] very plentiful indeed, and evidently much resorted to by the Maoris. Towards the head of the valley observed a handsome large *Polypodium* with fine bold pinnae, the sori showing as elevated pustules on the upper surface – also *P. nigrescens* and *Nephrodium decompositum*[11]. Found the ascent of the mountain very steep, and we had much difficulty in finding a practicable path. The summit proved to be 1850 ft, or 200 ft higher than Maungaroa. The principal vegetation on the top is *Weinmannia, Metrosideros* – apparently 2 species [actually one species existing in two forms or phases] – *Ascarina, Fitchia* etc with undergrowth of *Freycinetia* and a curious Bamboo like grass [= *Isachne distichophylla*]. *Lomaria procera* very plentiful and large size. *Acrostichum* [spelling uncertain but most likely this] *conforme*, a curious *Hypolepis* looking fern, *Trichomanes digitatum*, and *Polypodium Hookeri* were gathered for the first time. A species of *Carumbium* was noticed, closely

Fig. 12. Unidentified persons, Rarotonga, 1899. Photo: T.F. Cheeseman (Auckland Museum Library).

resembling our N.Z. plant, also a curious looking *Pisonia* like plant [probably *Pisonia umbellifera*]. Mosses were very plentiful on the top.

Monday, 19 June. Weather unfavourable. Kept in doors, but had plenty to do attending to my collections.

Tuesday, 20 June. Drove to Ngatangiia. Collected a number of marine shells on the reef at the back of the village, and took some photographs of the harbour. Collected *Tournefortia* for the first time, also a creeping water plant which may be *Jussiaea repens*.

Wednesday, 21 June. Attending to plants part of day, writing letters for mail rest.

Thursday, 22 June. Stormy and disagreeable. Working indoors.

Friday, 23 June. Fine. Went with Josephus up the hill to the north of Maungaroa. Saw plenty of *Fitchia* and most of the other plants noticed on Maungaroa. Collected *Andropogon refractus* and another grass new to me, also a fresh orchid, looking much like a *Sarcochilus*. On the way back Josephus shot two specimens of the Ioi bird[12].

Saturday, 24 June. In the afternoon climbed up the hill at the back of the Tereora school. Collected *Andropogon refractus* and a *Chloris* new to me. Saw *Dodonaea* for the first time in N.Z. [error for Rarotonga]. A fine large leaved tree probably allied to *Calophyllum* [possibly *Terminalia glabrata*] was also collected, and a tree with alternate 3-veined leaves. It has milky juice, and may be Euphorbiaceous [this species is *Pouteria grayana* (Sapotaceae)].

Sunday, 25 June. Drove to Avarua, and got three Maori boys to go up Maungatea with me. The track follows a ravine on the N.E. side of the mountain. Height of the mountain 1650 ft. For bearings of other peaks see note-book. A lower portion of the hill is bare and flat topped [Maungatea Bluff], covered with stunted *Gleichenia*. On the higher wooded peaks the principal trees, etc, were *Weinmannia, Ascarina,* Rata, *Freycinetia,* Neinei, Pua, Karaka,

Melastoma, Davallia solida, Trichomanes radicans[13], *Oberonia*, Large leaved orchid, *Coprosma, Lepinia* etc, *Wikstroemia*. The principal trees were certainly *Weinmannia*, Rata, Neinei.

Monday, 26 June. Rain most of day. Kept indoors, and could not even dry my paper.

Tuesday, 27 June. Showery in early morn but cleared up and I was able to dry my paper and change my plants.

Wednesday, 28 June. A fine day at last. At nine o'clock started with Tanei and Josephus for the gully on the S. side of Mangaroa [= Maungaroa]. We drove through Arorangi as far as the stream flowing into the sea a little beyond the village and then struck inland to Mr Gelling's plantation. Leaving it, we passed through a patch of forest, where I obtained my first specimens of *Ophioglossum pendulum*. Many of the fronds were 5-6 ft in length, by about 1½ inch wide, strongly undulated at the edge. Passing on we emerged from the bush and crossed the bare south east slope of Maungaroa, the principal vegetation on which was *Gleichenia* and *Lycopodium cernuum*. We then struck into the gully. This we found to be covered mainly with *Hibiscus tiliaceus*, growing very closely intertwined. Here and there were large patches of the Fehi. The whole gully had evidently been cultivated at one time, for the stone foundations of the houses, the cooking places, etc, could still be easily seen. Going still further, I succeeded in finding a clump of *Cyathea*, to obtain which I had made the expedition. *Alsophila decurrens* was growing with it, together with the ubiquitous *Marattia*. Little else of particular note was seen. Open places on the sides of the gully were filled with *Pteris incisa*, growing to a great size. On our return we took the old inland road at the back of Arorangi. I observed several plants of *Solanum repandum*, the fruit of which my Maori boys ate with avidity[14].

Thursday 29 June. Drove to Avatiu, and then walked up the creek. Large orange plantations occupied the major part of the lower portion of the valley, alternating with Taro swamps. Higher up there was the usual vegetation of *Hibiscus tiliaceus, Inocarpus, Aleurites* etc. Here and there were open patches or clearings, mostly occupied with Guinea grass. After walking rather more than a mile the track came to an end, and after trying to force my way through the tangle of *Hibiscus* along the stream with very indifferent success, I at length abandoned the attempt.

Friday, 30 June. At home all day, drying paper and sorting my collections. Fine and bright, with a drying wind.

Saturday, 1 July. Drove to Ngatangiia. Left horse and carriage at the Chief Pa-te-Pou, and then with a native guide followed up the course of the stream [the Avana Stream] which flows into the head of Ngatangiia harbour. A good track ran along the creek of a considerable distance, crossing repeatedly from side to side. As there was a considerable volume of water in the creek this necessitated much wading and jumping from stone to stone. Lower part of valley with the usual vegetation of Utu, Maupe, Karaka, Koka, Puka, Cocoa-nuts, etc. Large taro plantations were passed, very neatly made. A little flat is selected by the side of the stream. This is levelled, and then squares ranging from 20 to 40 ft or more are dug out, and the sides walled with stone to prevent them from falling in. The squares are, of course, gradually higher and higher as the valley is ascended. A flume or ditch is cut from the stream at some convenient point, and a quantity of water turned by means of it into the squares, which are thus kept perfectly irrigated. Some of the older squares, not now used, were very elaborate structures, and must have cost much time to construct and keep in order.

Higher up the Neinei, *Weinmannia*, Kawakawa, Turina and other mountain trees appeared. Ferns became much more numerous. *Asplenium horridum* was particularly

plentiful, also the large thin *Polypodium*. *Monogramme* was gathered for the first time, also a fine new *Trichomanes*, not yet identified.

Sunday, 2 July. At home all morning, drying my specimens and paper. In the afternoon taking photographs, etc.

Monday, 3 July. Drove to Ngatangiia with Rose and Miss Gudgeon. Hired a boat and went over to the island (Motutapu) to the seaward side of Ngatangiia Harbour. Got no plants of importance, but collected some good shells on the beach and took a number of photographs. [Narrative ends abruptly.]

NOTES ON THE TRANSCRIPT

1 The Union Steam Ship Company's two-masted, schooner-rigged S.S. *Ovalau* was built at Dumbarton, Scotland, in 1891 and was destroyed by fire at Lord Howe Island in 1903 (Brewer 1982).

2 Lieutenant-Colonel W.E. Gudgeon, second British Resident and (after 11 June 1901) first Resident Commissioner of the Cook Islands (Douglas & Douglas 1994).

3 The Rev. J.J.K. Hutchin of the London Missionary Society (Anonymous 1907).

4 Rarotonga has two circular coast roads, the outer, modern Ara Tapu, and the inner, ancient Ara Metua. Cheeseman refers to the latter in subsequent entries as the old road of Toi.

5 Cheeseman confused two ferns in the family Marattiaceae. *Marattia salicina* (*M. fraxinea* in the diary), also known as para, is the smaller of the two, less common, and grows only at higher altitudes. Anae, abundant in the valley bottoms where Cheeseman was describing the flora on this occasion, is *Angiopteris evecta*.

6 This orchid is almost certainly *Liparis clypeolum* which does not seem to have been collected or reported since Cheeseman's visit.

7 This is *Euphorbia atoto*. It is abundant on the *makatea* (raised coral) of some of the other Cook Islands but on Rarotonga today grows only on drier volcanic ridges such as around Ikurangi where Cheeseman went on this day. It is now absent from the lowlands where Cheeseman stated that it grew.

8 Probably not *Psychotria*, but perhaps the species that Cheeseman later described as *Ixora bracteata*.

9 "During a visit to Rarotonga, the Curator collected a series of 132 articles, illustrating the ethnology of that island ..." (Anonymous 1900). Much of this material survives in the Auckland Museum ethnology collection (Dr R. Neich, pers. comm.; Fig. 13) including slings and sling–stones, stone axes, stone pounders, mallets, drums, net–making implements, fish–hooks, wooden seats, woven bags, bowls, spoons, masks, shoes and items of clothing.

10 "An excellent carriage-road runs parallel to the shore; and a drive round the island ... can easily be accomplished in four or five hours ..." (Cheeseman 1903).

11 The "*Polypodium*" is likely to be *Tectaria decurrens*. "*Polypodium nigrescens*", now *Phymatosorus nigrescens*, is absent from Rarotonga – Cheeseman may have meant *Ph. commutatus*.

12 Rarotonga Starling *Aplonis cinerascens* (Sturnidae). In the Auckland Museum collection there are preserved whole in alcohol four specimens of this species attributed to Cheeseman (B3716–9; see Gill 1996).

13 *T. radicans* is a Northern Hemisphere species. Which large filmy fern Cheeseman saw is now uncertain.

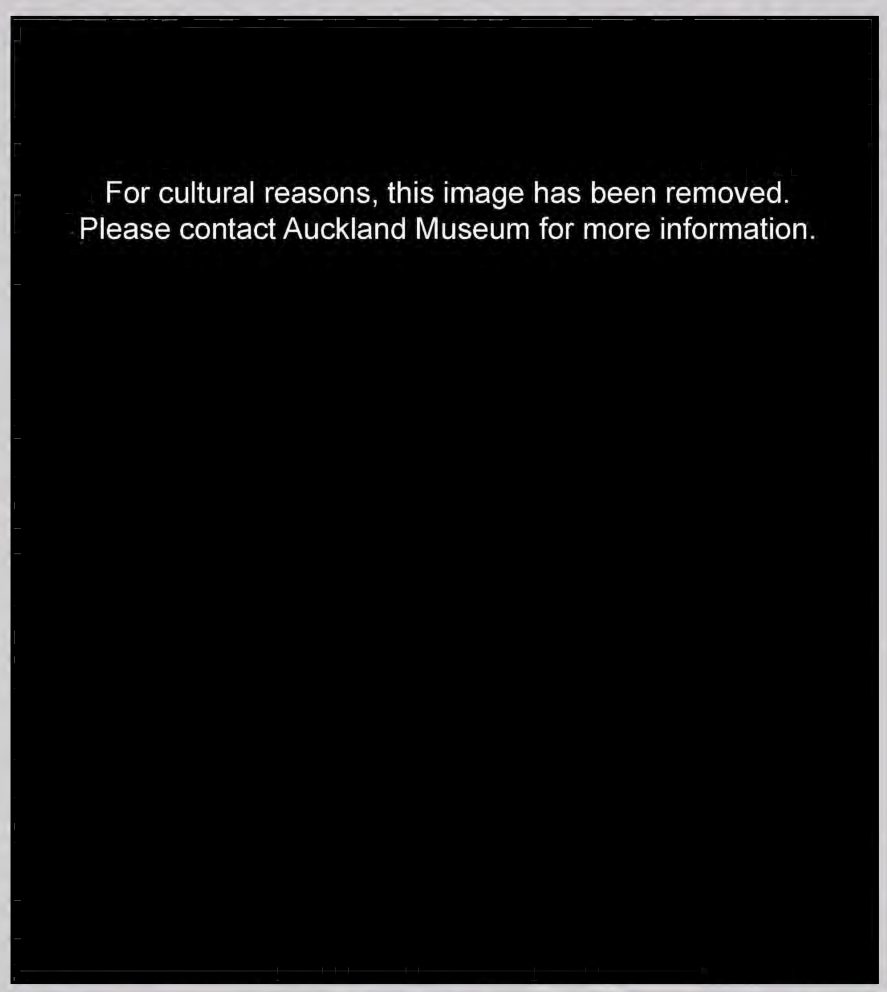

Fig. 13. Food pounder (*penu*) shaped in coral rock (Auckland Museum 12285). Collected by Cheeseman on Rarotonga, 1899. Photo: K. Pfeiffer.

[14] This species has not been collected on Rarotonga since 1899 and now appears to be extinct there. Today it is extremely rare on Mangaia, and is rare or extinct on many other Polynesian islands. Its natural range is uncertain but it may be conspecific with a species of the high northern Andes. The Polynesians may have introduced it to Rarotonga for its edible fruits.

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APPENDIX 1. Partial list of plant names in the Cheeseman diary showing equivalent names. For Cook Islands Maori names the scientific name is given in the second column. Where Cheeseman used a generic name alone, the species is shown here where this is clear. The current equivalent, in the Rarotongan context, is given for names that are now disused (the modern names may or may not be taxonomically equal). Further equivalent names are given in the text. Names that remain unchanged since Cheeseman's time (e.g. *Carica papaya*) are not listed.

Name used by Cheeseman	Equivalent name
Acalypha	*A. wilkesiana*
Acrostichum conforme	*Elaphoglossum gorgoneum*
Acrostichum spicatum	*Belvisia mucronata*
Ageratum	*A. conyzoides*
Aleurites	*A. moluccana*
Alsophila	*A. decurrens*
Andropogon refractus	*Cymbopogon refractus*
Artocarpus	*A. altilis*
Ascarina	*A. diffusa*
Asplenium of *Diplazium* section	*Diplazium harpeodes*
Barringtonia speciosa	*B. asiatica*
Boehmeria	*Leucosyke corymbulosa*
Carumbium	*Homalanthus nutans* aggr.
Chloris	*Enteropogon unispiceus*
Coprosma acutifolia	*C. laevigata*
Cordyline terminalis	*C. fruticosa*
cotton tree	*Ceiba pentandra*
Cyathea	*C. parksiae*
Cyperus	probably *C. cyperinus*
Davallia parallela	*Humata banksii*
Davallia elegans	*D. epiphylla*
Digitaria	*D. ciliaris* or *D. setigera*
Dodonaea	*D. viscosa*
Doodia	*D. media*
Eclipta alba	*E. prostrata*
Entada scandens	*E. phaseoloides*
Euphrasia	*Lindernia crustacea*
Fagraea	*F. berteriana*
fehi	*Musa troglodytarum*
Fimbristylis	*F. dichotoma*
Fitchia	*F. speciosa*
Fleurya	*Laportea interrupta*
Freycinetia	*F. arborea*
gardenia	*Gardenia taitensis*
Geniostoma	*G. rarotongense*
Gleichenia	*Dicranopteris linearis*
Gleichenia dichotoma	*Dicranopteris linearis*
guinea grass	*Panicum maximum*
Hernandia peltata	*H. nymphaeifolia*
Hypolepis	uncertain
Inocarpus edulis	*I. fagifer*

Inocarpus	*I. fagifer*
iron-wood	*Casuarina equisetifolia*
Jussiaea repens	*Ludwigia peploides*
Jussiaea suffruticosa	*Ludwigia octovalvis*
karaka	*Elaeocarpus tonganus*
kawakawa [= kavakava]	*Pittosporum rarotongense*
koka	*Bischofia javanica*
Lepinia	*Alstonia costata*
Leucaena Forsteri	*Schleinitzia insularum*
Lomaria procera	*Blechnum procerum* aggr.
Loranthus	*Decaisnina forsteriana*
Lycopodium flagellaria	probably *L. squarrosum*
Macaranga	*M. harveyana*
Marattia fraxinea	*Angiopteris evecta*
maupe	*Inocarpus fagifer*
Metrosideros polymorpha	*M. collina*
Monogramme	*Vaginularia angustissima*
Mussaenda frondosa	*M. raiateensis*
neinei	*Fitchia speciosa*
Nephrodium decompositum	*Lastreopsis pacifica*
Nephrolepis exaltata	*N. hirsutula*
Nephrolepis altescandens	*Arthropteris palisotii*
Oberonia	*O. equitans*
Oplismenus	*O. compositus* or *O. hirtellus*
Osteomeles	*O. anthyllidifolia*
Oxalis	*O. corniculata*
Pandanus odoratissimus	*P. tectorius*
Paspalum scrobiculatum	*P. orbiculare*
Peperomia	species uncertain
Phaseolus adenanthus	*Vigna adenantha*
Pipturus	*P. argenteus*
Polypodium phymatodes	*Phymatosorus grossus*
Polypodium Hookeri	*Grammitis cheesemanii*
Portulaca	*P. lutea*
Pteris aquilina	*Pteridium esculentum*
Pteris incisa	*Histiopteris incisa*
pua	*Fagraea berteriana*
puka	*Hernandia nymphaeifolia*
pukatea	*Pisonia grandis*
rata	*Metrosideros collina*
Sarcochilus	*Trachoma papuanum*
Scaevola Koenigii	*S. taccada*
Sida	*S. acuta* or *S. rhombifolia*
Siegesbeckia	*Sigesbeckia orientalis*
Theobroma	*Th. cacao*
Tournefortia	*T. argentea*
Trichomanes rigidum	*T. dentatum*
Trichomanes digitatum	*T. taeniatum*
turina	*Hernandia moerenhoutiana*
Urena	*U. lobata*
Vaccinium	*V. cereum*
vavai	*Ceiba pentandra*

vi	*Spondias dulcis*
Viscum articulatum	*Korthalsella platycaula*
Vitex	*V. trifolia*
Weinmannia	*W. samoensis*
Wikstroemia	*W. foetida*